

## ABSTRACT

The present invention provides a resonator for attenuating acoustic vibration from an air intake passage. The resonator includes a neck, a resonator chamber, a piston-type member, and an actuator. The neck is attached between the air passage and the resonator chamber. The neck has two overlapping portions allowing the neck to extend within the resonator chamber. The piston-type member is located within the resonator chamber and is translated by the actuator to change the volume of the resonator and the neck length. By changing the volume and neck length of the resonator, the frequency attenuated by the resonator can be adjusted.